

WHAT IS CLAIMED IS:

1. A network interconnection method for connecting a plurality of receiver hosts and a backbone network through first and second relay units and relaying a packet, wherein
5 said receiver hosts build a virtual network for receiving a multicast packet;

when receiving the packet from the backbone network, said first relay unit determines whether the packet is the multicast packet, specifies the virtual network to the
10 packet and specifies a port of said second relay unit to which the virtual network belongs if the packet is the multicast packet, and transfers the packet to the specified port; and

said second relay unit receives the transferred
15 packet, determines whether the packet is the multicast packet, and, if the packet is the multicast packet, transfers the multicast packet to ports to which the respective receiver hosts building the virtual network are connected.

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2. The network interconnection method according to claim 1, wherein

said receiver hosts build the virtual network for each multicast group and build the virtual network for
25 receiving all multicast packets; and

if the received packet is the multicast packet, said first relay unit specifies the virtual network for

receiving the multicast packet and specifies the port of said second relay unit to which the virtual network belongs.

3. The network interconnection method according to claim 1, wherein

in the network interconnection method, the virtual network is specified by adding or not adding an identifier to the packet.

4. The network interconnection method according to claim 1, wherein

in the network interconnection method, a third relay unit having an IGMP proxy function is provided between said second relay unit and the receiver hosts;

said third relay unit transmits an IGMP membership report from each of said receiver host to said second relay unit; and

said second relay unit forwards the multicast packet to a port receiving the membership report.

5. A network interconnection apparatus comprising first and second relay units connected between a plurality of receiver hosts and a backbone network, and relaying a packet, the plurality of receiver hosts building a virtual network for receiving a multicast packet, wherein

said first relay unit comprises:

a first determination unit which determines whether

the packet received from the backbone network is the multicast packet;

a specifying unit which specifies the virtual network to the packet according to a determination result of the
5 determination unit;

a first storage unit which stores information on the virtual network and information on a port of said second relay unit to which the virtual network belongs; and

a first transfer unit which retrieves the port of
10 the second relay unit to which the virtual network belongs from a content of the storage unit, and transfers the packet to the retrieved port, and

said second relay unit comprises:

a second determination unit which receives the
15 transferred packet, and determines whether the packet is the multicast packet;

a second storage unit which stores the information on the virtual network and the information on the port to which the virtual network belongs; and

a second transfer unit which transfers the port to
20 which the virtual network belongs from a content of the second storage unit according to a determination result of the second determination unit, and transfers the packet to the retrieved packet.

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6. The network interconnection apparatus according to claim 5, wherein

said network interconnection apparatus comprises a third relay unit having an IGMP proxy function and provided
5 between said second relay unit and the receiver hosts;

said third relay unit transmits an IGMP membership report from each of said receiver hosts to said second relay unit; and

said second relay unit forwards the multicast packet
10 to a port receiving the membership report.

7. The network interconnection apparatus according to claim 5, wherein

the specifying unit specifies the virtual network
15 by adding or not adding an identifier to the packet.

8. A network interconnection system comprising: a plurality of receiver hosts; a backbone network; and a network interconnection apparatus interposed between said
20 receiver hosts and the backbone network and relaying a packet, wherein

said receiver hosts build a virtual network for receiving a multicast packet;

said network interconnection apparatus comprises
25 first and second relay units connected between the plurality of receiver hosts building the virtual network for receiving the multicast packet and the backbone network,

and relaying the packet;

said first relay unit comprises:

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        a first determination unit which determines whether
        the packet received from the backbone network is the
5  multicast packet;

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a specifying unit which specifies the virtual network to the packet according to a determination result of the determining unit;

a first storage unit which stores information on the
10 virtual network and information on a port of said second
relay unit to which the virtual network belongs; and

a first transfer unit which retrieves the port of
the second relay unit to which the virtual network belongs
from a content of the storage unit, and transfers the packet
15 to the retrieved port.

said second relay unit comprises:

a second determination unit which receives the transferred packet, and determines whether the packet is the multicast packet;

20 a second storage unit which stores the information
on the virtual network and the information on the port to
which the virtual network belongs; and

a second transfer unit which transfers the port to which the virtual network belongs from a content of the second storage unit according to a determination result of the second determining unit, and transfers the packet to the retrieved packet, and

the multicast packet is transferred from the first relay unit to the port of the second relay unit to which the virtual network belongs.

- 5 9. The network interconnection system according to claim 8, wherein

said network interconnection apparatus comprises a third relay unit having an IGMP proxy function and provided between said second relay unit and the receiver hosts;

- 10 said third relay unit transmits an IGMP membership report from each of said receiver hosts to said second relay unit; and

said second relay unit forwards the multicast packet to a port receiving the membership report.

- 15 10. The network interconnection system according to claim 8, wherein

the specifying unit specifies the virtual network by adding or not adding an identifier to the packet.

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